DETAILED ACTION

Remarks

1. Applicant's amendment dated 7/8/2011 is entered.

Response to Arguments

2. Applicant's arguments filed 7/8/2011 have been fully considered but they are not persuasive.

3. In respond to rejection of claims 1, 3, 4, 8, and 11 in the last office action mailed on 6/23/2011, the Applicant declares that claims are finally rejected (Remarks, page 5; emphasis added):

> Claims 1, 3-4, 8, and 11 stand Finally rejected under 35 U.S.C. § 103(a) as obvious over of the publication, C. Gomila and A. Kobilansky, *SEI Message for Film Grain Encoding*, JVT of ISO/IEC MPEG and ITU-T VCEG, Geneva, Switzerland, May 2003, pages 1-14 (XP-002308742), in view of applicants' admitted prior art regarding the decoder 12 described in applicants' specification at page 5, line 18 through page 6, line 4.

However, Examiner presume above underlined statement is a "typo", beacause the abovementioned claims have only been rejected once in view of the references above.

4. Applicant furthermore summarize the rejection of claims 1, 3, 4, 8, and 11 (Remarks, page 5, lines 13-23) and properly acknowledges that the prior art detector 12 generates

a quantization parameter (Remarks, page 5, line 24). However the Applicant asserts (emphasis added):

> Applicants acknowledge that their decoder 12 generates a quantization parameter. However, the examiner has not shown that generating a quantization parameter *per se* would lead a skilled artisan to necessarily increase the comfort noise as recited in applicants' claims. In that regard, the examiner should understand the fundamental

Examiner respectfully disagrees with the Applicant's assertion. Examiner notes that the Applicant in his specification admits that "the decoder 12 takes the form of H.264 decoder known in the art" (see specification page 5, lines 22-23), which "The bit stream information output by the decoder 12 can include a quantization parameter input to the noise generator" (see the specification page 5, lines 26-27), which is principal of comfort noise generation, i.e., quantized parameter is inherently used to generate comfort noise. Does the Applicant argues the well known generation of comfort noise as it relates to quantization parameter? Examiner only in support of inherency refes to col. 6: lines 41-53 of (US 6,708,024 B1) which indicate scaling the quantized signal to a comfort level noise, when generating comfort noise as the Applicant claims (emphasis added):

The scaler **340** generates the scaling constant such that the samples of the Dq(k) signals are below approximately −30 dB, thereby producing comfort level noise. Because the noise level in the quantized Dq(k) signal may vary substantially from one sample to another, the scaler **340**, in conjunction with the instantaneous power value generated by the noise power estimator **345** based on a recursive algorithm, scales the Dq(k) sample to a comfort noise level. In one embodiment, the scaling constant may be obtained from a table, rather than computing equation (2), which requires a division operation. A table having pre-calculated values for given values of power(k) may be utilized to obtain a value for the scaling constant.

5. Applicant further argues (emphasis added):

> Film grain simulation, as discussed in the Gomila and Kobilansky publication, serves to add film grain to a video image to replace the film grain removed during decoding. Thus, Gomila and Kobilansky add film grain to increase the artifacts in a video image, not to hide them. The quantization of video during decoding has little if any affect on the film grain within the decoded image. Thus, Gomila et al. would have no need to increase or decrease the amount of film grain added to the decoded image based on quantization. Rather, the amount of film grain added by Gomila et al. to the image depends on the film grain present in the original image which is of no relevance with regard adding comfort noise to hide video artifacts resulting from decoding.

Examiner respectfully disagrees with the Applicant's assertion. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., **underlined in the extract above**) are not recited in the rejected claim(s). Although the claims are

interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Therefore claims stands rejected.

6. Applicant respect the same argument, as stated above for rejection of claim 1, for claims 5, 6, 13, 14, as well 7, 9, 10, and 15. Therefore claims stands rejected.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> **(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of t9333his title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.**

7. Claims 1, 3-4, 8, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gomila et al. (C. Gomila and A. Kobilansky, "SEI message for film grain encoding", document JVT-H022, JVT of ISO/IEC MPEG & ITU-R VCEG, Geneva, Switzerland, May 23-27, 2003) in view of Admitted Prior Art ("APA" hereinafter, "decoder 12" described in page 5: line 18 to page 6: line 4 of specification; also see "decoder 12 takes the form of a H.264 decoder known in the art" in page 5: lines 22-23)

Regarding claim 1, Gomila et al. disclose a method for reducing artifacts in a video stream (page 2, lines 5-21; Examiner notes that the artifacts are the missing film grain in the decoded images because as described in page 3 – emphasis added:

> According to the proposed strategy, supplemental information describing film grain of the original sequence is encoded in an SEI message defined by a Professional Extension of the JVT. This strategy requires the encoder to parameterize the film grain of the original sequence and the decoder to simulate the film grain according to a pre-defined model. To accomplish the film grain parameterization the encoder may need to perform an additional step in which the film grain is removed from the original source (Figure 1). In another strategy, the encoder may simply reuse the reconstructed images to model not the original film grain, but the film grain that has been suppressed by the encoding process (Figure 2). Note that the strategy implemented at the encoder is non-normative.

i.e., the disclosed method by Gomila is well suitable for reducing artifacts), comprising the steps of: decoding the video stream (Figure 1" "Decoding"); and adding random noise (page 5:, equation (2) where "N is a random value" in page 5: line 35) to at least one pixel in a picture in the video stream following decoding (Figure 1, "Film grain simulation"; page 3: line 27 "film grain simulation (decoder)" section) in an amount correlated to luminance information of at least a portion of a current picture (page 5 – emphasis added:

> In a first approach, we propose to use second order auto regression to model spatial correlation and first order regression to model cross-color and temporal correlations. All correlation factors depend on intensity of the decoded image. Horizontal and vertical spatial correlation factors are related by a constant aspect ratio factor.
>
> According to that, we suggest using the following formula to calculate the simulated grain value,

```
(2)       G(x,y,c,t,L) = p(c,L)* N +
                         q(c,L)*(  G(x-1,  y,c,t,L)  + A*G(  x,y-1,c,t,L)) +
                         r(c,L)*(A*G(x-1,y-1,c,t,L)  +    G(x+1,y-1,c,t,L)) +
                         s(c,L)*(  G(x-2,  y,c,t,L)  + A*A*G(x,y-2,c,t,L)) +
                         u(c,L)*G(x,y,c-1,t,L),
```

> where N is a random value with normalized Gaussian distribution, A is a constant pixel aspect ratio, p, q, r, s and u are correlation parameters. Parameter u is always zero for the first color channel, and grain value G assumed to be 0 whenever any index is out of range.

; see also page 4 section "Noise intensity" regarding the dependency of the amount of

noise on the image intensity). Gomila et al. also disclose the step of correlating the noise using a factor dependent on the temporal correlation of the current picture image with one of a previously displayed or decoded picture. (page 5 – emphasis added:

In a first approach, we propose to use second order auto regression to model spatial correlation and first order regression to model cross-color and temporal correlations. All correlation factors depend on intensity of the decoded image. Horizontal and vertical spatial correlation factors are related by a constant aspect ratio factor.

According to that, we suggest using the following formula to calculate the simulated grain value,

```
(2)      G(x,y,c,t,L) = p(c,L)* N +
                        q(c,L)*(  G(x-1,  y,c,t,L) + A*G(  x,y-1,c,t,L)) +
                        r(c,L)*(A*G(x-1,y-1,c,t,L) +   G(x+1,y-1,c,t,L)) +
                        s(c,L)*(  G(x-2,  y,c,t,L) + A*A*G(x,y-2,c,t,L)) +
                        u(c,L)*G(x,y,c-1,t,L),
```

where N is a random value with normalized Gaussian distribution, A is a constant pixel aspect ratio, p, q, r, s and u are correlation parameters. Parameter u is always zero for the first color channel, and grain value G assumed to be 0 whenever any index is out of range.
As can be seen from the structure of equation (2), grain values for a given pixel in a given color channel are calculated recursively using previously calculated grain values. Specifically, frames are calculated in order of increasing t. Within each frame, color channels processed in order of increasing c. Within each color channel, pixels are rasterized horizontally and then vertically in order of increasing x and y. When this order is followed, all grain values required by equation (2) are automatically calculated in advance.

). Gomila et al. do not explicitly disclose increasing the added comfort noise in accordance with a quantization parameter representing quantization of the incoming video stream.

APA discloses increasing the added comfort noise in accordance with a quantization parameter representing quantization of the incoming video stream (Specification page 6: lines 1-2). Therefore, it would have been obvious to one of the ordinary skills in the art to include the decoder 12 of APA in Gomila et al. invention because it is a H.264 decoder which is known in the art.

Regarding claim 3, Gomila et al. and APA disclose as stated in rejection of claim 2 above. Gomila et al. also disclose the correlation factor is established in accordance with one of a luma or color component. (see “C” and “L” in “correlation parameters” in page 5, equation 2 – emphasis added:

> In order to be able to interpret the set of parameters in the SEI message, the generator function requires specification of a generator model. Specifically, let I(x, y, c, t) be the decoded image pixel value at image position (x, y), color channel c, and frame number t. For convenience, we will assume that pixel values are scaled to have maximum value of 1. Further discussion is oriented at RGB image representation (c = 1, 2, or 3), although may be directly applied to monochromatic images and, with obvious modifications, to YUV representation.

> where L(x, y, t) is a measure of local intensity in the image. One possible implementation is to define L as luminance, or a weighted sum of intensities I(x, y, c, t) over all color channels.

).

Regarding claim 4, Gomila et al. and APA disclose as stated in rejection of claim 2 above. Gomila et al. also disclose the step of adding noise to a color component of the picture in accordance with a luma component. (see “L” in equation 2)

Regarding claim 8, Gomila et al. disclose a decoder arrangement for decoding a coded video stream to yield reduced artifacts, (page 2, lines 5-21; Examiner notes that the artifacts are the missing film grain in the decoded images because as described in page 2 – emphasis added:

> According to the proposed strategy, supplemental information describing film grain of the original sequence is encoded in an SEI message defined by a Professional Extension of the JVT. This strategy requires the encoder to parameterize the film grain of the original sequence and the decoder to simulate the film grain according to a pre-defined model. To accomplish the film grain parameterization the encoder may need to perform an additional step in which the film grain is removed from the original source (Figure 1). In another strategy, the encoder may simply reuse the reconstructed images to model not the original film grain, but the film grain that has been suppressed by the encoding process (Figure 2). Note that the strategy implemented at the encoder is non-normative.

i.e., the disclosed method by Gomila is well suitable for reducing artifacts), comprising the steps of: decoding the video stream (Figure 1" "Decoding"); comprising: a video decoder for decoding an incoming coded video stream to yield decoded pictures (Figure 1" "Decoding"); a reference picture store for storing at least one previously decoded picture for use by the decoder in decoding future pictures, (page 8 – emphasis added:

Figure 6 shows the compression curve obtained by ranging the QP values from 16 to 30. The following parameters were selected to configure the JM6.1a encoder:

GOP: 16 frames (IPBBPBB)
Number of reference frames: 2
Search range: 32
Direct mode type: spatial
Entropy coding method: CABAC
Context init method: adaptive

Which means the used corresponding decoder (see the underlined encoder above) must have (implicitly) a reference picture (see underlined reference frame) stored as well, if it will be able to decode the bitstream successfully); a noise generator noise for generating random noise (page 5:, equation (2) where "N is a random value" in page 5: line 35) for addition to at least one pixel in a decoded picture (Figure 1, "Film grain simulation"; page 3: line 27 "film grain simulation (decoder)"; page 5 – emphasis added

Assuming an additive grain model, grain simulation changes each pixel value to

(1) $J(x,y,c,t) = I(x,y,c,t) + G(x,y,c,t,L(x,y,t))$,

)

in an amount correlated to luminance information of at least a portion of a current picture; (page 5 – emphasis added

In a first approach, we propose to use second order auto regression to model spatial correlation and first order regression to model cross-color and temporal correlations. All correlation factors depend on intensity of the decoded image. Horizontal and vertical spatial correlation factors are related by a constant aspect ratio factor.

According to that, we suggest using the following formula to calculate the simulated grain value,

```
(2)      G(x,y,c,t,L) = p(c,L)* N +
                        q(c,L)*(  G(x-1,  y,c,t,L) + A*G(  x,y-1,c,t,L)) +
                        r(c,L)*(A*G(x-1,y-1,c,t,L) +    G(x+1,y-1,c,t,L)) +
                        s(c,L)*(  G(x-2,  y,c,t,L) + A*A*G(x,y-2,c,t,L)) +
                        u(c,L)*G(x,y,c-1,t,L),
```

where N is a random value with normalized Gaussian distribution, A is a constant pixel aspect ratio, p, q, r, s and u are correlation parameters. Parameter u is always zero for the first color channel, and grain value G assumed to be 0 whenever any index is out of range.

) using a factor dependent on the temporal correlation of the current picture image with one of a previously displayed or decoded picture. (page 5 – emphasis added:

In a first approach, we propose to use second order auto regression to model spatial correlation and first order regression to model cross-color and temporal correlations. All correlation factors depend on intensity of the decoded image. Horizontal and vertical spatial correlation factors are related by a constant aspect ratio factor.

According to that, we suggest using the following formula to calculate the simulated grain value,

```
(2)      G(x,y,c,t,L) = p(c,L)* N +
                        q(c,L)*(  G(x-1,  y,c,t,L) + A*G(  x,y-1,c,t,L)) +
                        r(c,L)*(A*G(x-1,y-1,c,t,L) +    G(x+1,y-1,c,t,L)) +
                        s(c,L)*(  G(x-2,  y,c,t,L) + A*A*G(x,y-2,c,t,L)) +
                        u(c,L)*G(x,y,c-1,t,L),
```

where N is a random value with normalized Gaussian distribution, A is a constant pixel aspect ratio, p, q, r, s and u are correlation parameters. Parameter u is always zero for the first color channel, and grain value G assumed to be 0 whenever any index is out of range.
As can be seen from the structure of equation (2), grain values for a given pixel in a given color channel are calculated recursively using previously calculated grain values. Specifically, frames are calculated in order of increasing t. Within each frame, color channels processed in order of increasing c. Within each color channel, pixels are rasterized horizontally and then vertically in order of increasing x and y. When this order is followed, all grain values required by equation (2) are automatically calculated in advance.

) a noise picture store for storing the noise information for subsequent use by the noise generator (see "N is a random value" in page 5, lines 29-37 and page 6: equation 3; Examiner notes that the noise in spatial and temporal correlations of previously

calculated grain value of a pixel is used to generate the noise at the current pixel position, as disclosed in page 5: - emphasis added:

> In a first approach, we propose to use second order auto regression to model spatial correlation and first order regression to model cross-color and temporal correlations. All correlation factors depend on intensity of the decoded image. Horizontal and vertical spatial correlation factors are related by a constant aspect ratio factor.
>
> According to that, we suggest using the following formula to calculate the simulated grain value,

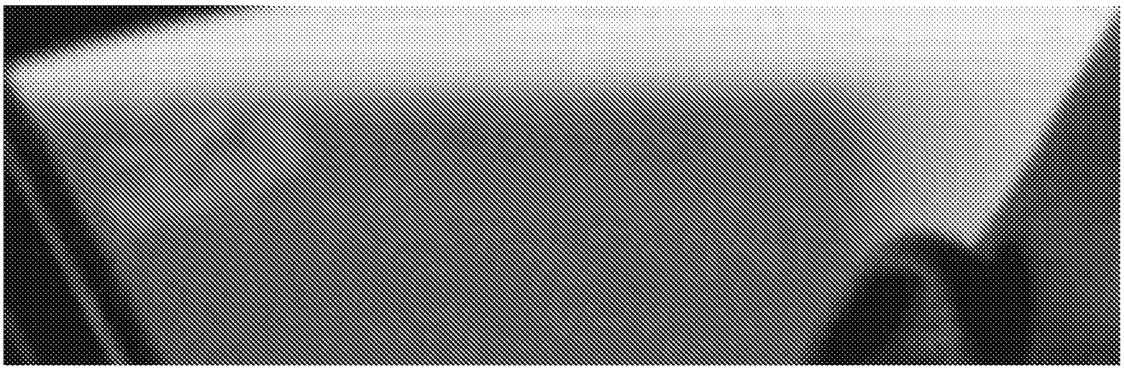
```
(2)       G(x,y,c,t,L) = p(c,L)* N +
                         q(c,L)*(  G(x-1,  y,c,t,L) + A*G(  x,y-1,c,t,L)) +
                         r(c,L)*(A*G(x-1,y-1,c,t,L) +    G(x+1,y-1,c,t,L)) +
                         s(c,L)*(  G(x-2,  y,c,t,L) + A*A*G(x,y-2,c,t,L)) +
                         u(c,L)*G(x,y,c-1,t,L),
```

> where N is a random value with normalized Gaussian distribution, A is a constant pixel aspect ratio, p, q, r, s and u are correlation parameters. Parameter u is always zero for the first color channel, and grain value G assumed to be 0 whenever any index is out of range.
> As can be seen from the structure of equation (2), grain values for a given pixel in a given color channel are calculated recursively using previously calculated grain values. Specifically, frames are calculated in order of increasing t. Within each frame, color channels processed in order of increasing c. Within each color channel, pixels are rasterized horizontally and then vertically in order of increasing x and y. When this order is followed, all grain values required by equation (2) are automatically calculated in advance.

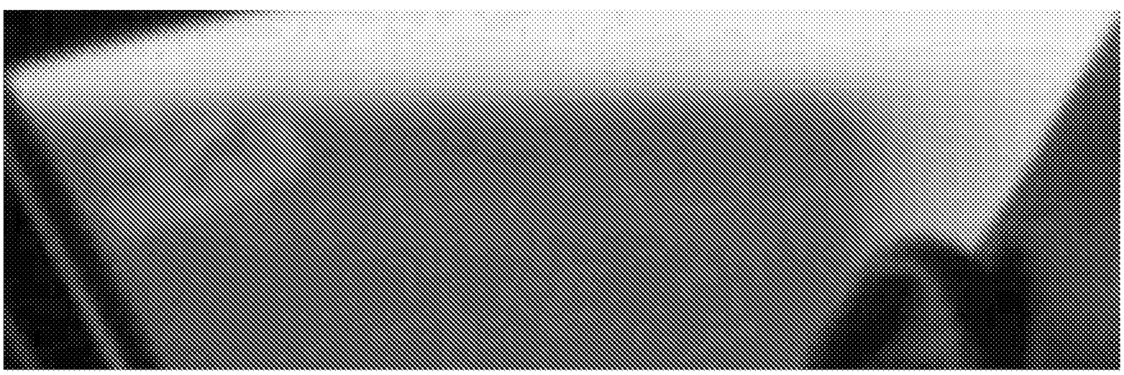
therefore, in order to enable the reuse of the noise it must be stored for every pixel, which means a noise picture store is implicitly (inherently) given); a summing block for summing the noise generated by the noise generator with a decoded picture from the decoder (see "+" in equations 1, 2 and 3); and a clipper for clipping the summed noise and decoded picture. (Examiner notes that a clipper is implicitly present and inherently included, because the noise has a predetermined variance using such clipper, as disclosed in page 6 – emphasis added

> In Figure 3, film grain samples were obtained by first order auto-regression, the noise being added in the RGB logarithmic color space. In (a), the variance of the random noise was set to values 0.05, 0.08, 0.11 and 0.14. In (b), the color of the grain is studied: in (b1), G and B were fully correlated to R, so the grain is perceived monochromatic; in (b2), G and B were partially correlated to R; (b3) G was fully correlated to R, while B is uncorrelated; as a result grain is perceived gray, yellow or blue. Finally in (b4), the three color components were uncorrelated.

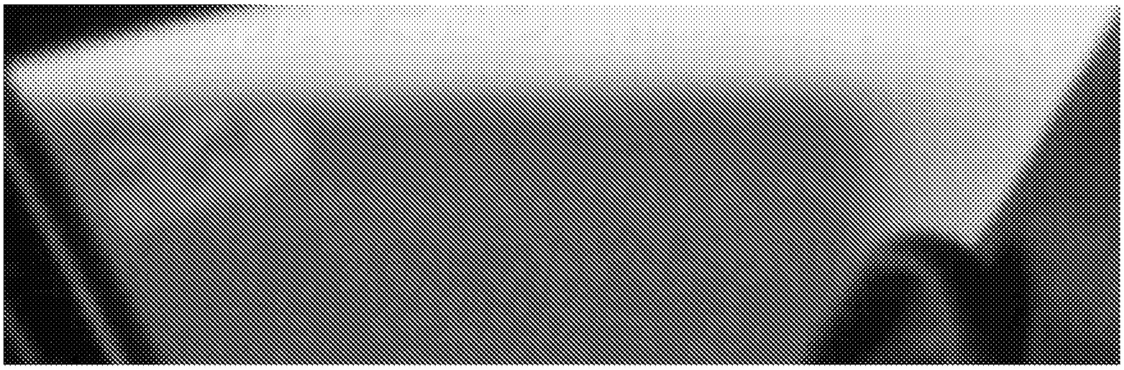
Without clipper, there will be no restriction to the maximum value of the noise amplitude. Therefore, the noise, added to the decoded pictures, led to strong visible artifacts in dark and light regions of the output images. However, no such artifacts are visible in the images of Figure 8:



(a) QP28 + film grain generated by the auto-regressive model



(b) QP28 + film grain generated by filtering Gaussian noise



(c) Original

This is due to use of the clipper use). Gomila et al. do not explicitly disclose the decoder is generating a quantization parameter representing quantization of the coded video stream and the noise is increased in strength in accordance with an increase of the quantization parameter.

APA discloses the decoder is generating a quantization parameter representing quantization of the coded video stream (page 5: lines 2529 of the specification) and the noise is increased in strength in accordance with an increase of the quantization parameter (page 6: lines 1-2 of the specification). Therefore, it would have been obvious to one of the ordinary skills in the art to include the decoder 12 of APA in Gomila et al. invention because it is a H.264 decoder which is known in the art.

8. Claims 5, 6, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gomila (C. Gomila, "SEI message for film grain encoding", document JVT-I013r2, JVT of ISO/IEC MPEG & ITU-R VCEG, California, USA, September 2-5, 2003) in view of Admitted Prior Art ("APA" hereinafter, "decoder 12" described in page

5: line 18 to page 6: line 4 of specification; also see “decoder 12 takes the form of a H.264 decoder known in the art” in page 5: lines 22-23) and further in view of Gomila et al. (C . Gomila and A. Kobilansky, "SEI message for film grain encoding", document JVT-H022, JVT of ISO/IEC MPEG & ITU-R VCEG, Geneva, Switzerland, May 23-27, 2003).

Regarding claim 5, Gomila et al. and APA disclose as stated in rejection of claim 2 above. Gomila et al. do not explicitly disclose wherein the correlation factor is first established on an N.times.N pixel picture block basis (where N is an integer) prior to interpolation of the additive noise. Gomila, in the same field of endeavor (Examiner notes that the subject matter disclosed by Gomila is based on Gomila et al. disclosure - see page 1, paragraph 3 of Gomila and page 6 of Gomila et al.), discloses the correlation factor is first established on an N.times.N pixel picture block basis (“…each block of 16x16 pixels…” in page 3, last two pars.). Therefore, it would have been obvious to one of the ordinary skills in the art to include the teaching of Gomila et al. in those disclosed by Gomila in order to generate the claimed invention with a reasonable expectation of success.

Regarding claim 6, Gomila et al. and APA disclose as stated in rejection of claim 1 above. Gomila et al. do not explicitly disclose the step of adjusting the noise based on the intensity of an N.times.N block (where N is an integer) of adjacent pixels. Gomila, in the same field of endeavor (Examiner notes that the subject matter disclosed by Gomila

is based on Gomila et al. disclosure - see page 1, paragraph 3 of Gomila and page 6 of Gomila et al.), discloses adjusting the noise based on the intensity of an N.times.N block ("…each block of 16x16 pixels…" in page 3, last two pars.). Therefore, it would have been obvious to one of the ordinary skills in the art to include the teaching of Gomila et al. in those disclosed by Gomila in order to generate the claimed invention with a reasonable expectation of success.

Regarding claim 13, Gomila et al. and APA disclose as stated in rejection of claim 8 above. Gomila et al. do not explicitly disclose further including a second picture store for storing an N.times.N pixel block picture average, where N is an integer, for use by the noise generator. Gomila, in the same field of endeavor (Examiner notes that the subject matter disclosed by Gomila is based on Gomila et al. disclosure - see page 1, paragraph 3 of Gomila and page 6 of Gomila et al.), discloses adjusting the noise based on the intensity of an N.times.N block ("…each block of 16x16 pixels…" in page 3, last two pars; Examiner note that the memory is implicitly included.). Therefore, it would have been obvious to one of the ordinary skills in the art to include the teaching of Gomila et al. in those disclosed by Gomila in order to generate the claimed invention with a reasonable expectation of success.

Regarding claim 14, Gomila discloses a decoder arrangement for decoding a coded video stream to yield reduced artifacts (section 1: par. 1), comprising: a video decoder for decoding an incoming coded video stream to yield decoded pictures; (section 3: par.

1); a reference picture store for at least one storing at least one previously decoded picture for use by the decoder in decoding future pictures, (page 5 – emphasis added:

> In this section, we present the obtained results on five sequences from the test set used in the JVT PExt. Sequences were encoded with 8 bits (dropping the 2 LSB) using the JM6.1a version of the reference software. The following parameters were selected to configure the JM6.1a encoder:
>
> GOP: 24 frames (IPBBPBB)
> Number of reference frames: 2
> Search range: 32
> Direct mode type: spatial
> Entropy coding method: CABAC

Which means the used corresponding decoder (see the underlined encoder above) must have (implicitly) a reference picture (see underlined reference frame) stored as well, if it will be able to decode the bitstream successfully); a noise generator noise for generating noise in accordance with decoded pictures (page 3: lines 1 -5, page 3: line 28 , page 4, line 13) and bit stream information from the decoder for addition to at least one pixel in the decoded picture ("SEI message" in page 2: lines 1-3 is part of the bitstream) using a factor dependent on the temporal correlation of the current picture image with one of a previously displayed or decoded picture. (page 5 – emphasis

added:

In a first approach, we propose to use second order auto regression to model spatial correlation and first order regression to model cross-color and temporal correlations. All correlation factors depend on intensity of the decoded image. Horizontal and vertical spatial correlation factors are related by a constant aspect ratio factor.

According to that, we suggest using the following formula to calculate the simulated grain value,

```
(2)        G(x,y,c,t,L)  = p(c,L)* N +
                           q(c,L)*(  G(x-1,  y,c,t,L) + A*G(  x,y-1,c,t,L)) +
                           r(c,L)*(A*G(x-1,y-1,c,t,L) +   G(x+1,y-1,c,t,L)) +
                           s(c,L)*(  G(x-2,  y,c,t,L) + A*A*G(x,y-2,c,t,L)) +
                           u(c,L)*G(x,y,c-1,t,L),
```

where N is a random value with normalized Gaussian distribution, A is a constant pixel aspect ratio, p, q, r, s and u are correlation parameters. Parameter u is always zero for the first color channel, and grain value G assumed to be 0 whenever any index is out of range.
As can be seen from the structure of equation (2), grain values for a given pixel in a given color channel are calculated recursively using previously calculated grain values. Specifically, frames are calculated in order of increasing t. Within each frame, color channels processed in order of increasing c. Within each color channel, pixels are rasterized horizontally and then vertically in order of increasing x and y. When this order is followed, all grain values required by equation (2) are automatically calculated in advance.

) a picture store for storing an N x N pixel block picture average, where N is an integer, for use by the noise generator, ("...each block of 16x16 pixels..." in page 3, last two pars.) a summing block for summing the noise generated by the noise generator with a decoded picture from the decoder. ("+" in equation (1); page 3, lines 1-5). Gomila do not explicitly disclose that the noise generator generates noise in an amount correlated to additive noise of at least one pixel in a prior picture.

However, one of the ordinary skills in the art would recognize that the problem to solve by the claim invention is how to reduce the artifact of temporal flickering due to the added noise. Gomila et al., in the same field of endeavor (Examiner notes that the subject matter disclosed by Gomila is based on Gomila et al. disclosure - see page 1, paragraph 3 of Gomila and page 6 of Gomila et al.) solve the problem by correlating the

amount of the current noise to the noise of the previous frame using a temporal correlation factor v (DI: page 6, lines 6-1 1). Therefore, it would have been obvious to one of the ordinary skills in the art to include the teaching of Gomila et al. in those disclosed by Gomila in order to solve the problem posed. Gomila et al. do not explicitly disclose the decoder is generating a quantization parameter representing quantization of the coded video stream and the noise is increased in strength in accordance with an increase of the quantization parameter.

APA discloses the decoder is generating a quantization parameter representing quantization of the coded video stream (page 5: lines 2529 of the specification) and the noise is increased in strength in accordance with an increase of the quantization parameter (page 6: lines 1-2 of the specification). Therefore, it would have been obvious to one of the ordinary skills in the art to include the decoder 12 of APA in Gomila et al. invention because it is a H.264 decoder which is known in the art.

9. Claims 7, 9, and 10 are rejected under 35 U.S.C. 102(a) as being unpatentable over Gomila (C. Gomila, "SEI message for film grain encoding", document JVT-I013r2, JVT of ISO/IEC MPEG & ITU-R VCEG, California, USA, September 2-5, 2003) in view of LeBlanc et al. (US 7,773,741 B1).

Regarding claim 7, Gomila et al. and APA disclose as stated in rejection of claim 1 above. Gomila et al. do not explicitly disclose wherein the amount of noise is correlated using an approximation of a Finite Impulse Response (IIR) filter. However, use of IIR

filter for correlator for comfort noise generator is well known in the art, as disclosed by LeBlanc et al. Therefore, it would have been obvious to one of the ordinary skills in the art to include the IIR filter of LeBlanc et al. as the filter of Gomila et al. in order to generate the claimed invention with a reasonable expectation of success.

Regarding claim 9, Gomila et al. and APA disclose as stated in rejection of claim 8 above. Gomila et al. do not explicitly disclose wherein the noise generator implements an instantiation of a Finite Impulse Response filter. However, use of IIR filter for correlator for comfort noise generator is well known in the art, as disclosed by LeBlanc et al. Therefore, it would have been obvious to one of the ordinary skills in the art to include the IIR filter of LeBlanc et al. as the filter of Gomila et al. in order to generate the claimed invention with a reasonable expectation of success.

Regarding claim 10, Gomila et al. and APA disclose as stated in rejection of claim 8 above. Gomila et al. do not explicitly disclose wherein the noise generator implements an approximation of an Infinite Impulse Response filter. However, use of IIR filter for correlator for comfort noise generator is well known in the art, as disclosed by LeBlanc et al. Therefore, it would have been obvious to one of the ordinary skills in the art to include the IIR filter of LeBlanc et al. as the filter of Gomila et al. in order to generate the claimed invention with a reasonable expectation of success.

10. Claim 15 is rejected under 35 U.S.C. 102(a) as being unpatentable over Gomila et al. (C. Gomila and A. Kobilansky, "SEI message for film grain encoding", document JVT-H022, JVT of ISO/IEC MPEG & ITU-R VCEG, Geneva, Switzerland, May 23-27, 2003) in view of LeBlanc et al. (US 7,773,741 B1).

Regarding claim 15, Gomila et al. and APA disclose as stated in rejection of claim 14 above. Gomila et al. do not explicitly disclose wherein the noise generator implements an instantiation of a Finite Impulse Response filter. However, use of IIR filter for correlator for comfort noise generator is well known in the art, as disclosed by LeBlanc et al. (US 7,773,741 B1). Therefore, it would have been obvious to one of the ordinary skills in the art to include the IIR filter of LeBlanc et al. as the filter of Gomila et al. in order to generate the claimed invention with a reasonable expectation of success.

Conclusion

11. **THIS ACTION IS MADE FINAL**. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nader Bolourchi whose telephone number is (571) 272-8064. The examiner can normally be reached on M-F 8:30 to 4:30.

13. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Shuwang Liu, SPE can be reached on (571) 272-3036. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

14. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).

/N. B./

Examiner, Art Unit 2611

/KABIR A TIMORY/

Primary Examiner, Art Unit 2611